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POST MEETING REPORT
FOURTH ANNUAL CLINICAL DIABETES TECHNOLOGY MEETING
APRIL 11-12, 2008
ORLANDO, FLORIDA

The Fourth Annual Clinical Diabetes Technology Meeting was presented by the Diabetes Technology Society at the Orlando, Florida, Hyatt Regency Hotel on April 11-12, 2008. The first day covered Technologies for Diabetes Monitoring and the second day covered Technologies for Diabetes Therapy.

On April 11, 2008, which was the Technologies for Diabetes Monitoring day, the first presentation was made by Barry Ginsberg, M.D., Ph.D., on the topic, "Self-Monitoring of Blood Glucose." He explained the use of self monitoring of blood glucose for clinical decision making and addressed issues with glucose monitoring, including common user errors that can interfere with accuracy.

Howard Wolpert, M.D., presented an overview of Continuous Glucose Monitoring (CGM) technology. He described how metabolic monitoring with continuous glucose monitoring can provide information about nutritional and metabolic status that is unavailable with spot glucose testing.

Jennifer Block, R.N., CDE, discussed the concept of CGM as a behavior modification tool. She explained how, to modify eating habits and exercise habits based on CGM and also achieve improved medication compliance with CGM. She discussed how with CGM, patients must confront seeing all of their glucose readings demonstrated for days at a time, and she referred to this phenomenon as "naked diabetes."

Darrell Wilson, M.D., discussed glycemic variability. He pointed out how useful it can be to utilize the data provided by continuous glucose monitoring to determine therapy of diabetes. He provided examples of glycemic patterns that can be discerned through this monitoring technology.

Bruce Buckingham, M.D., gave a live demonstration on the "Interpretation of Continuous Glucose Data." He presented case study examples of how continuous glucose monitoring can provide insight into patient behavior and assist in determining drug and diet therapy.

He described strategies for modifying insulin dosages and timing to improve control, as measured by CGM.

Jill Abelseth, M.D., described the policies of reimbursement for continuous glucose monitoring through her experience with government payers and insurance payers for determining coding, coverage, and payment for new monitoring technologies, such as continuous glucose monitoring devices. She emphasized the need for physicians to communicate with these payers to effect establishment of favorable policies for the use and reimbursement of these new technologies.

John Buse, M.D., Ph.D., presented an update on A1C and mean blood glucose reporting. He described how Hemoglobin A1C and mean glucose levels correlate and explained why the concept of mean blood glucose was developed.

Lois Jovanovic, M.D., discussed technology for monitoring and managing diabetes in pregnancy. She demonstrated that there is a need for detection of diabetes in women of childbearing years and how controlled insulin delivery and the use of CGM promotes optimal maternal and fetal health during pregnancy with diabetes.

Michael Rocco, M.D., explained how to select noninvasive cardiovascular imaging tests for patients with diabetes. He described how noninvasive testing measures cardiac structure and function, as well as how to determine which patients with diabetes require noninvasive CV testing. He described a variety of emerging imaging technologies.

LTC Tom Sauerwein, M.D., FACE, spoke on the topic of "Establishing an Electronic Medical Record (EMR) for a Diabetes Clinic." He described how EMR can lead to improved outcomes for patients with diabetes. He also explained how EMR can lead to improved recruiting for research trials.

In this session, entitled "Patient Panel: Living with Continuous Glucose Monitoring," five patients who used three different continuous glucose monitors, between them, discussed benefits and drawbacks of having access to real-time glucose values and how this technology has improved their glycemic control. The patients (and one mother of a child panelist) were interviewed by the panel moderators, Paula Jameson, M.S.N., ARNP, and Irina Nayberg, R.N.

On April 12, 2008, which was the Technologies for Diabetes Therapy day, the first presentation was made by G. Alexander Fleming, M.D. on "Thiazolidinedione Therapy." He explained what went right and what went wrong with this family of drugs from a regulatory perspective. He explained how the mechanism of action of these drugs led not only to improved glycemic control, but to clinically significant congestive heart failure and clinically significant anemia, as well as even coronary artery disease.

Alan Garber, M.D., Ph.D., FACE, presented a lecture on "Incretin Therapy vs. DPP4 Inhibitor Therapy." He covered mechanisms of action of Incretin hormones and DPP-4 agonists, side effects of these drugs, and how patients can benefit from thiazolidinediones and DPP-4 agonists.

Lawrence Blonde, M.D., FACP, FACE, explained when and how to initiate insulin therapy in type 2 diabetes. He explained the use of short-acting pre-meal dosing as well as long-acting basal insulin.

Jeffrey Joseph, D.O., and Curtiss Cook, M.D., FACE, spoke on "Hospital Management of Diabetes." They explained the need for intensive glycemic control in hospital patients. They explained that hyperglycemia may precede or become part of a hospitalization as a stress response. They supported that clinical outcomes are adversely affected by hyperglycemia.

Linda Schrock, M.N., R.N., BC-ADM, CDE, and Paula Jameson, M.S.N., ARNP, presented an overview of the latest devices for managing diabetes entitled "Pens, Pumps, and Dosing Software: The Latest Devices." They demonstrated examples of insulin pens, pumps, and software for determining insulin dosages.

Lori Laffel, M.D., discussed insulin pumps in the schools. She began her talk with statistics associated with pumps used in the pediatric population, continued with conditions and needs of the school nurse, and ended with explaining the need for additional training to understand patient's needs and pumps.

Curtiss Cook, M.D., FACE presented on insulin pumps in the hospital, illustrating his presentation with case studies of pumps in the hospital and how self-management of pumps can be effective in the hospital under controlled conditions.

Bruce Bode, M.D., FACE, opened his presentation with engaging audience response questions about clinicians and downloading pump information, and then went on to

presenting various meters, pumps and available software choices. He also presented data about the performance of Glucommander software for hospital management of hyperglycemia.

Stuart Weinzimer, M.D., addressed the practical considerations of sensor augmented pump therapy and engaged the audience by using the audience response system to explore the question, “How do we use pumps and sensors?” He included challenges and benefits of utilizing continuous glucose monitors linked to insulin delivery systems.

Ruth Weinstock, M.D., presented an overview of telemedicine for managing diabetes. With a short video, she illustrated a case of remote use of telemedicine for a non-ambulatory patient. She stated that considerations in the use of telemedicine include data entry, accurate transmission, securely controlled access, auditing capability, reliability, stability, and cost of equipment. Also, she pointed out how the internet has been used in diabetes education and how telemedicine has been used in correctional facilities.

Tim Wysocki, Ph.D., ABPP, spoke on “Children with Diabetes – Strategies to Increase Compliance.” From his research and experience as a psychologist, he presented case study statistics and behavioral interventions on the presentation topic and emphasized the benefits of motivational interviewing.

Robert Gabbay, M.D., Ph.D., began his presentation on “Adults with Diabetes – Strategies to Increase Compliance” by using the audience response system to engage the clinicians with questions as to how they teach patients. In his talk he presented the idea of motivational interviewing and the website www.motivationalinterviewing.org for practical suggestions such as using open ended questions, and commenting with statements resembling “It sounds like...” or “you mean that...” or “you’re wondering if...” or “so you feel...” The meeting concluded with a panel discussion on the future of diabetes technologies. This panel of technology experts, which included Bruce Bode, M.D., FACE, Jeffrey Joseph, D.O., Lori Laffel, M.D., and Stuart Weinzimer, M.D., fielded questions from the audience. Topics included: making devices smaller, utilization of algorithms for insulin dosing, closed-loop development, alarms that sound in other rooms, further development of tight glucose monitoring in hospitals, continuous glucose monitors, intravascular glucose monitors, and the future of telemedicine.

During the meeting, the speakers asked questions to the audience about their preferences for treatments. The questions were then answered and the results were tabulated in real time. A sample of these questions and the audience responses are contained in figures 1-8.

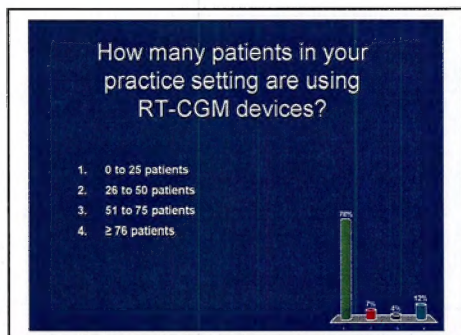


Fig. 1

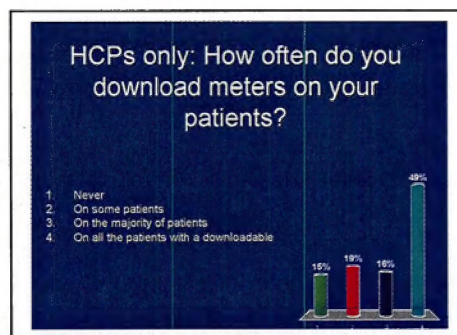


Fig. 2

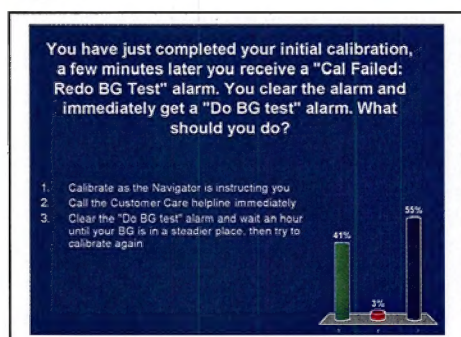


Fig. 3

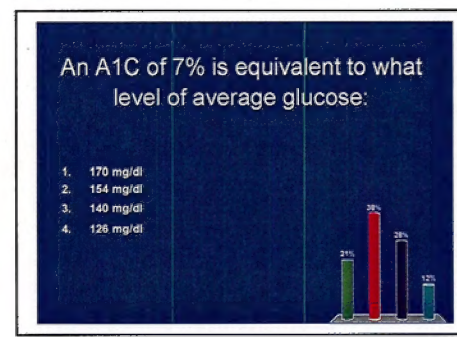


Fig. 4

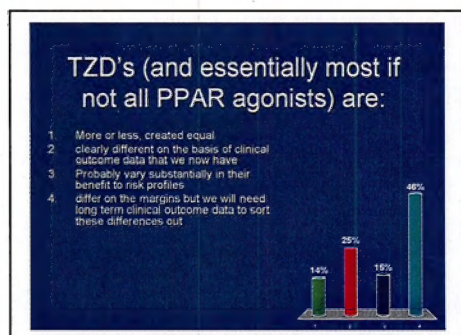


Fig. 5

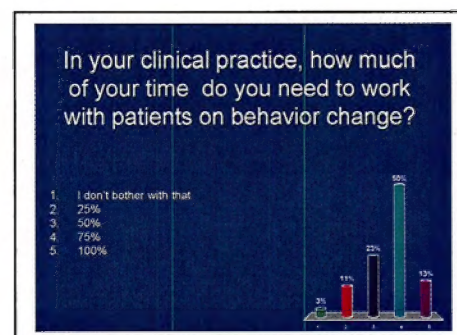


Fig. 6

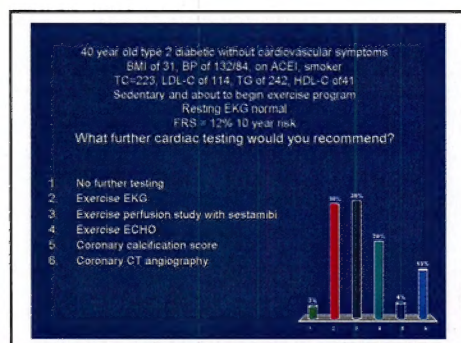


Fig. 7

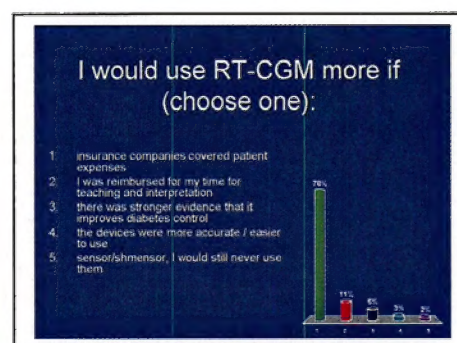


Fig. 8

The conclusions of the meeting speakers and organizers were that: 1) technology is contributing to better devices for monitoring diabetes; 2) technology is contributing to better drug delivery systems for treating diabetes; and 3) technology will improve outcomes in diabetes and other diseases requiring ongoing monitoring and therapy.

Friday/Saturday
April
11-12, 2008

Fourth Annual

CLINICAL DIABETES TECHNOLOGY MEETING

A PRACTICAL COURSE FOR CLINICIANS TAUGHT BY CLINICIANS

Technologies for Diabetes Monitoring and Therapy

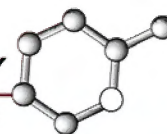
**Hyatt Regency
Orlando International Airport**

Presented by:



DIABETES TECHNOLOGY SOCIETY

Applying science and engineering to fight diabetes



Developed in cooperation with:

- Yale University, Department of Pediatrics
- Stanford University, Department of Pediatrics
- UCSF Diabetes Center
- Pennsylvania State University, Department of Medicine
- Barbara Davis Center for Childhood Diabetes/
University of Colorado
- US Army
- Mills-Peninsula Health Services

Meeting supported by educational grants from:

- Abbott Diabetes Care
- Amylin-Lilly
- Bayer Healthcare, Diabetes Care
- Becton, Dickinson and Company
- LifeScan, Inc.
- Medtronic Diabetes
- Merck & Co., Inc.
- Novo Nordisk A/S

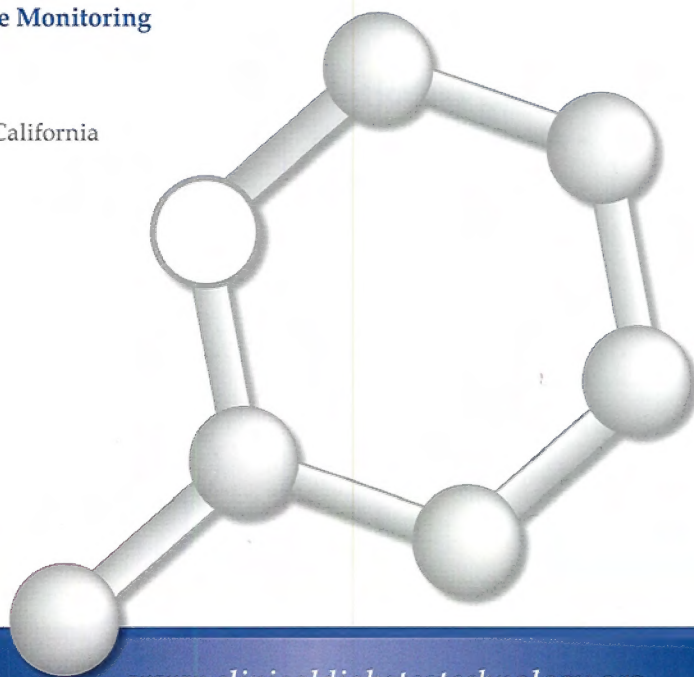
Planning Committee:

- **David Klonoff, MD, FACP, Chair**
Diabetes Research Institute, Mills-Peninsula Health
Services, San Mateo, California, and Department of
Medicine, University of California at San Francisco;
Editor, *Journal of Diabetes Science and Technology*
- **Robert Gabbay, MD, PhD**
Department of Medicine, Pennsylvania State
University, Hershey, Pennsylvania
- **Satish Garg, MD**
Departments of Pediatrics and Medicine, Barbara
Davis Center for Childhood Diabetes, University of
Colorado, Aurora, Colorado
- **Stephen Gitelman, MD**
Department of Pediatrics, University of California at
San Francisco, San Francisco, California
- **Jeffrey Joseph, DO**
Artificial Pancreas Center and Department of
Anesthesiology, Thomas Jefferson University,
Philadelphia, Pennsylvania
- **Robert Vigersky, MD**
Diabetes Institute, Walter Reed Army Medical Center,
Washington, DC
- **Stuart Weinzimer, MD**
Department of Pediatrics, Yale University,
New Haven, Connecticut
- **Darrell Wilson, MD**
Department of Pediatrics, Stanford University,
Palo Alto, California
- **Howard A. Wolpert, MD**
Joslin Diabetes Center, Harvard University,
Boston, Massachusetts

FRIDAY, APRIL 11, 2008

Technologies for Diabetes Monitoring

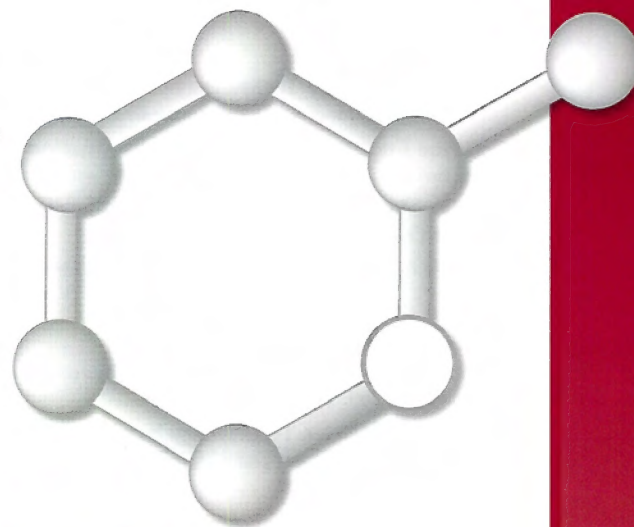
- 08:00 **Welcome: First Day**
David Klonoff, MD, FACP
Mills-Peninsula Health Services, San Mateo, California and
UCSF, San Francisco, California
- 08:05 **Self-Monitoring of Blood Glucose**
Barry Ginsberg, MD, PhD
Diabetes Technology Consultants, Wyckoff, New Jersey
- 08:45 **Overview of Continuous Glucose Monitoring Technology**
Howard Wolpert, MD
Joslin Diabetes Center, Harvard University, Boston, Massachusetts
- 09:25 **Continuous Glucose Monitoring as a Behavior Modification Tool**
Jennifer Block, RN, CDE
Stanford University, Palo Alto, California
- 10:05 **Break (refreshments provided)**
- 10:30 **Glycemic Variability**
Darrell Wilson, MD
Stanford University, Palo Alto, California
- 11:10 **Live Demonstration of Interpretation of Continuous Glucose Data**
Bruce Buckingham, MD
Stanford University, Palo Alto, California
- 11:50 **Reimbursement for Continuous Glucose Monitoring**
Jill Abelseth, MD
Endocrine Group, Albany, New York
- 12:30 **Lunch (provided)**
- 13:40 **Update on A1C and Mean Blood Glucose Reporting**
John Buse, MD, PhD, CDE, FACE
University of North Carolina, Chapel Hill, North Carolina
- 14:20 **Technology for Monitoring and Managing Pregnancy in Diabetes**
Lois Jovanovic, MD
Sansum Diabetes Research Institute, Santa Barbara, California
- 15:00 **How to Select Noninvasive Cardiovascular Imaging Tests**
Michael Rocco, MD
Cleveland Clinic, Cleveland, Ohio
- 15:40 **Break (refreshments provided)**
- 16:05 **Establishing an Electronic Medical Record for a Diabetes Clinic**
LTC Tom Sauerwein, MD, FACE
US Air Force, Wilford Hall, San Antonio, Texas
- 16:45 **Patient Panel: Living With Continuous Glucose Monitoring**
Paula Jameson, MSN, ARNP
Nemours Children's Clinic, Orlando, Florida
Irina Nayberg, RN
Mills-Peninsula Health Services, San Mateo, California
- 17:45 **Adjourn**



SATURDAY, APRIL 12, 2008

Technologies for Diabetes Therapy

- 08:00 **Welcome: Second Day**
David Klonoff, MD, FACP
 Mills-Peninsula Health Services, San Mateo, California and UCSF, San Francisco, California
- MEDICAL MANAGEMENT OF TYPE 2 DIABETES**
- 08:05 **Thiazolidinedione Therapy: What Went Right and What Went Wrong?**
G. Alexander Fleming, MD
 Kinexum LLC, Harper's Ferry, West Virginia
- 08:25 **Incretin Therapy vs. DPP4 Inhibitor Therapy**
Alan Garber, MD, PhD, FACE
 Baylor College of Medicine, Houston, Texas
- 08:45 **When and How to Initiate Insulin Therapy in Type 2 Diabetes**
Lawrence Blonde, MD, FACP, FACE
 Ochsner Clinic Foundation, New Orleans, Louisiana
- 09:05 **Panel Discussion**
Lawrence Blonde, MD, FACP, FACE
 Ochsner Clinic Foundation, New Orleans, Louisiana
Alan Garber, MD, PhD, FACE
 Baylor College of Medicine, Houston, Texas
G. Alexander Fleming, MD
 Kinexum LLC, Harper's Ferry, West Virginia
- 09:25 **Hospital Management of Diabetes**
Jeffrey Joseph, DO
 Thomas Jefferson University, Philadelphia, Pennsylvania
Curtiss Cook, MD, FACE
 Mayo Clinic, Scottsdale, Arizona
- 10:05 **Break (refreshments provided)**
- 10:30 **Pens, Pumps, and Dosing Software: The Latest Devices**
Linda Schrock, MN, RN, BC-ADM, CDE
 Elkhart General Hospital, Elkhart, Indiana
Paula Jameson, MSN, ARNP
 Nemours Children's Clinic, Orlando, Florida
- 11:10 **Insulin Pumps in the Schools and the Hospital**
Lori Laffel, MD
 Joslin Diabetes Center, Harvard University, Boston, Massachusetts
Curtiss Cook, MD, FACE
 Mayo Clinic, Scottsdale, Arizona
- 11:50 **Software for Diabetes**
Bruce Bode, MD, FACE
 Atlanta Diabetes Associates, Atlanta, Georgia
- 12:30 **Lunch (provided)**
- 13:40 **Sensor Augmented Pump Therapy: Practical Considerations**
Stuart Weinzimer, MD
 Yale University, New Haven, Connecticut
- 14:20 **Telemedicine for Managing Diabetes**
Ruth Weinstock, MD
 SUNY, Upstate Medical University, Syracuse, New York
- 15:00 **Break (refreshments provided)**
- MOTIVATING STRATEGIES TO INCREASE PATIENT COMPLIANCE WITH DIABETES THERAPY**
- 15:25 **Children with Diabetes – Strategies to Increase Compliance**
Tim Wysocki, PhD, ABPP
 Nemours Children's Clinic, Jacksonville, Florida
- 16:05 **Adults with Diabetes – Strategies to Increase Compliance**
Robert Gabbay, MD, PhD
 Pennsylvania State University, Hershey, Pennsylvania
- 16:45 **Future of Diabetes Technology: Panel Discussion**
Bruce Bode, MD, FACE
 Atlanta Diabetes Associates, Atlanta, Georgia
Lori Laffel, MD
 Joslin Diabetes Center, Harvard University, Boston, Massachusetts
Jeffrey Joseph, DO
 Thomas Jefferson University, Philadelphia, Pennsylvania
Stuart Weinzimer, MD
 Yale University, New Haven, Connecticut
- 17:45 **Adjourn**



MEETING ANNOUNCEMENT

Eighth Annual

DIABETES TECHNOLOGY MEETING

Applying science and engineering to fight diabetes

November 13 - 15, 2008
Marriott Bethesda Hotel

Presented by DIABETES TECHNOLOGY SOCIETY
www.diabetestechology.org

PRE-MEETING WORKSHOPS

- **Intellectual Property for Diabetes Technology**
Balancing the interests of inventors, developers, manufacturers, and investors
- **Technology to Assess Diet and Exercise**
Measuring calories in and out
- **Noninvasive Glucose Monitoring**
Measuring glucose optically
- **Diabetes Information Management**
Transmitting, storing, and analyzing data to improve care

MEETING TOPICS

- **Technologies for Metabolic Monitoring**
New methods for measuring glucose and markers of glycemic control
- **Nanotechnology for Glucose Sensors**
Measuring glucose on a small scale
- **Artificial Pancreas**
Including automatic glucose sensors, insulin delivery systems, and feedback control
- **Insulin Delivery Technology**
Novel methods for avoiding painful needle injections
- **Tissue Engineering for Insulin Production**
Nurturing islet cells to function in an abiotic environment
- **Technologies for Improving Compliance With Diabetes Therapy**
How to inspire patients to actually use the technology

PROGRAM HIGHLIGHTS

- **Two Poster Sessions**
Posters will be presented during two evening receptions on October 25, 2007 and October 26, 2007
- **Annual Diabetes Technology Survey**
Results will be presented and discussed in real-time throughout the meeting
- **Live Demonstrations**

ABSTRACT SUBMISSION

- Deadline to submit: July 03, 2008
- For information on how to submit an Abstract go to:
www.diabetestechology.org
- Abstracts will be published in *Journal of Diabetes Science and Technology*, distributed to all meeting attendees, and considered for oral and poster presentation.

PETERSON STUDENT RESEARCH AWARDS

- Gold \$1000 / Silver \$500 / Bronze \$300
- Also includes travel, lodging, and registration for best 3 Diabetes Technology Abstracts first-authored by students

IN COOPERATION WITH

- Centers for Disease Control and Prevention
- US Army
- UC Berkeley Department of Bioengineering
- Georgia Tech/Emory Center for the Engineering of Living Tissues
- Mills-Peninsula Health Services
- *Journal of Diabetes Science and Technology*

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